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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/782,780	02/13/2001	Gregory Bollella	RSW920000109US1	2022
25259	7590	02/28/2005	EXAMINER	
IBM CORPORATION 3039 CORNWALLIS RD. DEPT. T81 / B503, PO BOX 12195 REASEARCH TRIANGLE PARK, NC 27709			VO, LILIAN	
			ART UNIT	PAPER NUMBER
			2127	

DATE MAILED: 02/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/782,780

Applicant(s)

BOLLELLA ET AL.

Examiner

Lilian Vo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. Claims 1 – 20 are pending.

Claim Rejections - 35 USC § 101

2. Claims 1 – 20 are rejected under 35 U.S.C. 101 because they are directed to non-statutory subject matter.

3. **Claims 1- 13** are directed to non-statutory subject matter and is rejected under 35 U.S.C. 101 because it is not tangibly embodied in a manner so as to be executable and the system itself is not including any hardware.

4. **Claims 14 – 20** are directed to method steps, which can be practiced mentally in conjunction with pen and paper, therefore they are directed to non-statutory subject matter. Specifically, as claimed, it is uncertain what performs each of the claimed method steps. Moreover, each of the claimed steps, inter alia, computing, adding, repeating, using, determining, can be practiced mentally in conjunctions with pen and paper. The claimed steps do not define a machine or computer implemented process [see MPEP 2106]. Therefore, the claimed invention is directed to non-statutory subject matter. (The examiner suggests applicant to change “method” to “computer implemented method” in the preamble to overcome the outstanding 35 U.S.C. 101 rejection).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 - 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balasubramanian (US 6,687,257).

7. Regarding **claim 14**, Balasubramanian discloses a method for improving scheduling of tasks (col. 4, lines 35 – 39), comprising steps of:

computing whether execution of a plurality of tasks is feasible, wherein each of the tasks has an associated cost and an associated deadline (abstract, col. 10, lines 55 – 61, col. 11, lines 10 – 36, fig 9);

adding an additional amount of time to the associated cost for each of the tasks, thereby yielding a revised cost for each task, when the execution is computed to be feasible (abstract, col. 13, lines 11 – 31, col. 14, lines 1 – 29, fig 11: see rational reason below); and

iteratively repeating operation of the computing step and the adding step, until the execution is computed to be no longer feasible (col. 11, lines 37 – 40, figs. 8a, 8b, 9 and 11).

With respect to the limitation of adding an additional amount of time to the associated cost for each of the tasks, thereby yielding a revised cost for each task, when the execution is computed to be feasible, Balasubramanian discloses execution of tasks is capable of meeting its

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execution deadline in which the allocation of bandwidth for guaranteeing the execution of tasks is done under the assumption that the full interrupt window will be used by interrupts taking the highest priority. In other words, the allocated bandwidth for each task clearly includes the additional times the interrupt event that occur during its execution. It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to recognize the allocated bandwidth for each task is the revised cost for each task because the additional time has been included and considered in Balasubramanian's system in which time occur from interrupt event during the current task execution can be handled without affecting guarantees for task execution (col. 14, line 20 – 29).

With respect to the limitation of iteratively repeating operation, Balasubramanian discloses the determination of executing for new arrive task which guarantee completion by their deadline (fig. 9) and discloses the allocation of bandwidth for guaranteeing the execution of tasks is done under the assumption that the full interrupt window will be used by interrupts taking the highest priority (col. 14, lines 24 – 29). It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to recognize the step of determining if the executing of each task is feasible is being iteratively repeating providing that it performs on all of the new arrive tasks which ensure that each task can be executed by its deadline.

8. Regarding **claim 15**, Balasubramanian discloses that there is allocated bandwidth for guaranteeing the execution of tasks is done under the assumption that the full interrupt window will be used and executed within the interrupt window without affecting guarantees for task execution (col. 14, lines 21 – 29). It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to recognize the allocated bandwidth for each task is the

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revised cost for each task which is used as an upper limit on execution time for the task because it applies to every task in Balasubramanian's system to ensure tasks can be executed by its deadline with the interrupt event occurred.

9. Regarding **claim 16**, Balasubramanian discloses the method according to claim 14, wherein the additional amount of time is a fixed percentage of the associated cost for the task (col. 13, lines 51 – 67: the number is interrupts expected and how long interrupts take to be serviced).

10. Regarding **claim 17**, Balasubramanian discloses the method according to claim 14, wherein the additional amount of time is zero for a subset of the tasks, and for all other tasks is a fixed percentage of the associated cost for the task (col. 13, lines 19 – 30: in some cases, interrupt events may preempt the current task -- incur additional time to the current task cost; or might wait its turn -- zero additional time to the current task).

11. Regarding **claim 18**, Balasubramanian discloses the limitation in which in one iteration the additional amount of time is a fixed percentage of the associated cost for the task and on other iterations, the additional amount time is a fixed percentage of the revised cost the task (col. 13, line 19 – 30, 51 – 67, col. 14, lines 21 – 29). It is considered well-known in the art as shown in applicants' admitted prior and Balasubramanian that associated cost for each task is the same on every iteration except when unscheduled task such as interrupt event occur, which is unpredictable and could be during the first iteration. Therefore, a fixed percentage of additional time of the associated cost for the task could also be equivalent to the fixed percentage of

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additional time of the revised cost for the task since revised cost means interrupt task has occurred.

12. Regarding **claim 19**, Balasubramanian discloses the limitation in which in one iteration the additional amount of time is zero for a subset of the tasks, and for all other tasks is a fixed percentage of the associated cost for the task and on other iterations, the additional amount time is a fixed percentage of the revised cost the task (col. 13, line 19 – 30, 51 – 67, col. 14, lines 21 – 29). It is considered well-known in the art as shown in applicants' admitted prior and Balasubramanian that associated cost for each task is the same on every iteration except when unscheduled task such as interrupt event occur, which is unpredictable and could be during the first iteration. Therefore, a fixed percentage of additional time of the associated cost for the task could also be equivalent to the fixed percentage of additional time of the revised cost for the task since revised cost means interrupt task has occurred.

13. Regarding **claim 20**, Balasubramanian discloses the method according to claim 14, further comprises steps of:

determining, at run-time, whether a particular one of the tasks has exceeded its associated cost, and if so, allowing the particular task to run until reaching a minimum of (1) an amount of time remaining until the task's associated deadline or (2) the upper limit on execution time for the task (col. 14, lines 1 – 29: process the interrupt (the particular task) within the interrupt window)

14. **Claims 1 – 13** are rejected on the same ground as stated in claims 14 – 20 above.

Response to Arguments

15. Applicant's arguments filed 10/8/04 have been fully considered but they are not persuasive for the reason set forth in the rejection above.

16. In response to applicant's argument that neither the cited text from col. 13 or fig. 11 contains any discussion whatsoever of adding time (page 12, 1st paragraph), a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

Conclusion

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

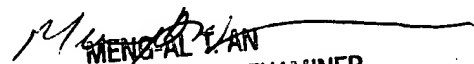
18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilian Vo whose telephone number is 571-272-3774. The examiner can normally be reached on Monday - Thursday, 7:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lilian Vo
Examiner
Art Unit 2127

lv
February 14, 2005


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